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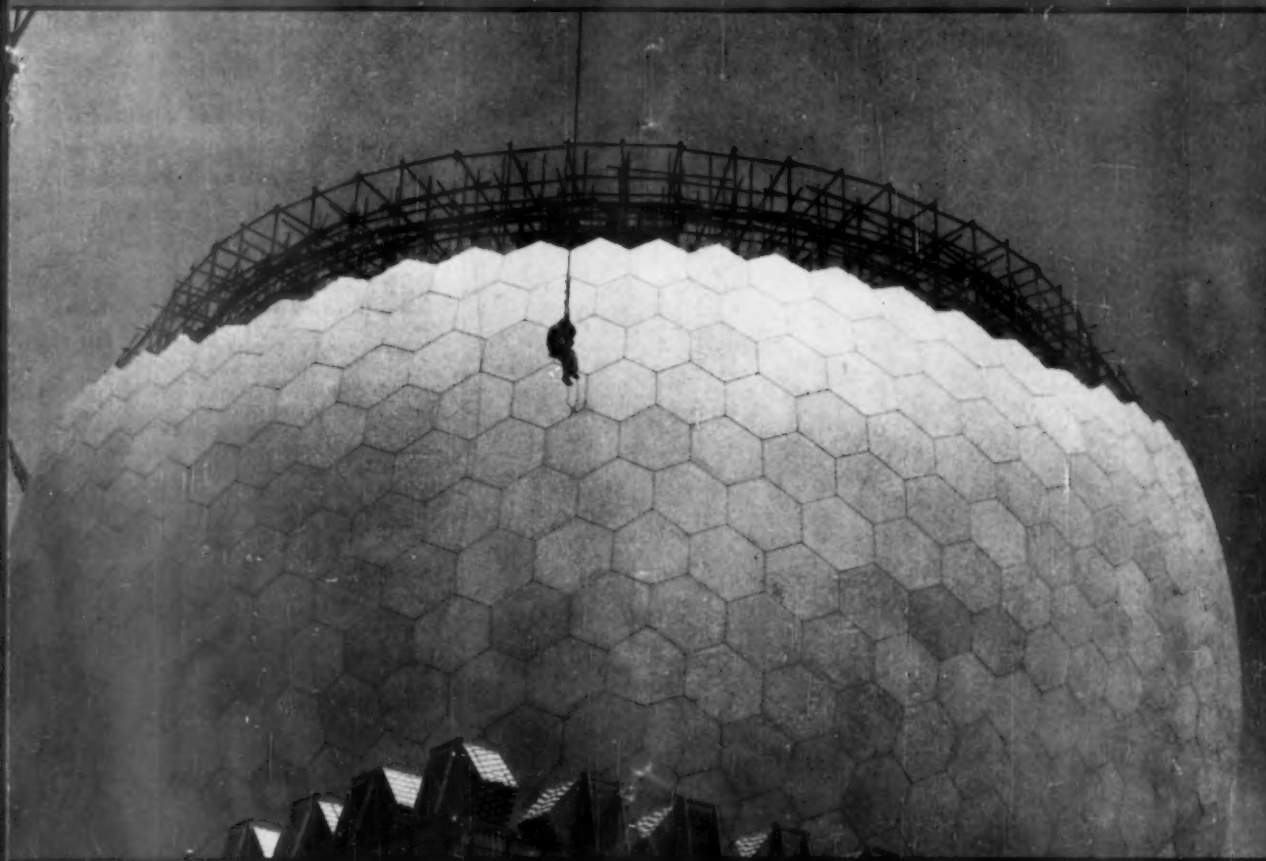
September 26, 1959

VOL. 75 NO. 12

PAGES 193-208

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Arctic Dome

See Page 197

A SCIENCE SERVICE PUBLICATION



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## CHEMISTRY

# Seaweed Aids Ulcers

Chemical research has resulted in a possible new medicine for peptic ulcers from a seaweed extract. Other advances were reported to the American Chemical Society.

SEAWEED extract as a medicine for treating peptic ulcers is a possibility reported to the American Chemical Society meeting in Atlantic City, N. J., by Dr. John C. Houck, director of the Children's Hospital biochemical research laboratory, Washington, D. C.

Carrageenin, a sulfated polysaccharide, that composes 60% to 70% of dried seaweed, apparently interferes with the development of ulcers by blocking the action of pepsin, Dr. Houck found in animal experiments. The chemical is not ready yet for human trials.

T. Lee and J. Bhayana of Georgetown University Hospital, Washington, D. C., were co-authors of the report.

Insecticides, herbicides and other agricultural chemicals share blame with domestic, industrial and natural wastes for contaminating the nation's water resources, F. M. Middleton of the Robert A. Taft Sanitary Engineering Center, Cincinnati, told the chemists. Effective and economical water treatment methods for many of the complex organic materials are not yet developed.

PLANT cells and tissues that make up beans, yams, potatoes, and several other

plants can now be successfully grown in large volume for the potential production of drugs, Dr. Louis G. Nickell, a plant physiologist, reported at the American Chemical meeting.

He explained to the scientists that the plant-cell growing technique resembles the growing of yeast in beer mash or the culturing of mold in deep tanks to produce antibiotic drugs.

This process on a large scale opens the possibilities for better production of plant substances such as steroids and alkaloids, which are valuable as drugs.

One of the plant tissues produced in large amounts in the experiment came from the Mexican yam, a source of steroid cortisone, used in the treatment of hormone deficiencies, rheumatic diseases, and allergic disorders. Alkaloids are highly important as sources of tranquilizing drugs, blood pressure reducing agents, for the drug atropine, an anti-spasmodic also used in surgery to diminish secretion, and morphine.

For the time being, no attempts have been made to produce specific chemical compounds, but Dr. Nickell sees the possibility that the products from the plant

cells may also evolve into medicines that are effective against diseases which do not now yield to antibiotics.

The research has been done at Charles Pfizer & Co., Brooklyn, and Dr. Nickell's co-worker on the report was Dr. Walter Tuleck, also of Pfizer. Laboratory cultures of tissues from higher plants in the form of colonies of free cells have lagged behind comparable work with animal tissues, it was said. One problem is apparently that plant cells tend naturally to bind together while animal cells in tissue culture have the reverse tendency.

Dr. Nickell expressed the belief that the most exciting possibilities as a result of the large-scale culture technique lay in the effects free growth will have on the plant cells.

## Thailand Antibiotic

A NEW ANTIBIOTIC from a sample of Thailand soil has been successfully used against animal diseases.

Tylosin, as the antibiotic is called, is being investigated clinically for its effectiveness against staphylococcus and streptococcus infections, Dr. Robert L. Hamill told the American Chemical Society meeting. So far it has tested as relatively non-toxic. Tests have also been begun to determine its effects on human beings.

In addition to Dr. Hamill, Dr. Paul F. Wiley, Dr. Martha C. Stamper and Michael E. Haney Jr., all of the Eli Lilly and Company, were co-authors of the report. Tylosin was produced from a new strain of *Streptomyces fradiae*.

## Bubbles Protect

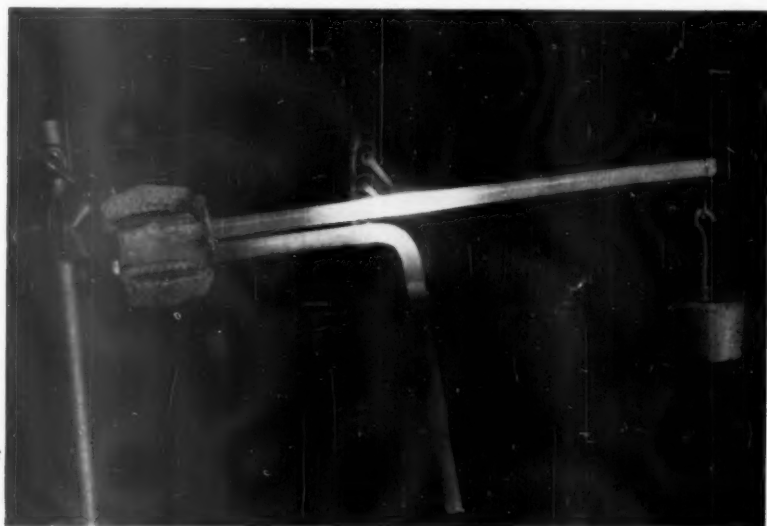
MICROSCOPIC plastic bubbles more valuable than gold for embedding and protecting airplane and rocket instruments have been developed by F. T. Parr of Westinghouse Electric Corporation and announced to the Chemical Society meeting.

The new protective composition consists of microscopic plastic balloons of phenolic resins bound together by another plastic epoxy resin. It saves more than a quarter in weight over conventional filler materials. Since reduction of a pound of weight in airplane equipment is estimated to save \$765, it is rated as worth more than the value of gold, which is \$420 a pound.

The hollow resin bubbles are filled with an inert gas such as nitrogen. They were originally developed by the Standard Oil Company of Ohio to retard the evaporation losses on oil storage tanks.

From ordinary soft coal, chemists have obtained acids which promise new textile finishes, adhesives and binders for glass fibers, Drs. R. S. Montgomery and Wesley L. Archer of Dow Chemical Company, Midland, Mich., told the chemists.

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**TRANSPARENT CERAMIC**—A bar of Lucalox, a translucent ceramic developed at the General Electric Research Laboratory, Schenectady, N. Y., and a bar of fused quartz are heated by a blow torch. At a temperature of 2,350 degrees Fahrenheit, the bar of quartz bends under its own weight; the bar of Lucalox supports a 50-gram weight even as the temperature rises to 3,200 degrees Fahrenheit. The ceramic is made from aluminum oxide powder, pressed into shape and sintered. Microscopic pores or bubbles that make conventional ceramics appear opaque have been removed.

Columbium is used in some stainless steels designed to be welded or used at high temperatures; the element helps prevent changes in the steel's crystalline structure.

# SCIENTIA INTERNATIONAL

## NOVAS DEL MENSE IN INTERLINGUA

**Psychologia.**—Silentio absolute, si ben como obscuritate absolute, non promove e non facilita le addormir se pro humanos. Iste facto esseva definite demonstrate in experimentos effectuate al laboratorios psychologic del Universitate Indiana. Le explication de iste satis sorprendente constatation pare esser que le silentio e le obscuritate non interrompe per mesmo le plus micre sono o luminositate pone le subjecto in un stato de "tension de expectation." Ille expecta le usual stimulus acustic e visual con un si forte concentration que le relaxation que debe preceder le advento del somnio deveni impossibile.

**Cosmetica.**—Vernisses cosmetic, del typo que es applicate al capillatura per aerosolisation, es potencialmente hasardose pro le sanitate de lor usatrice. Certes de ille vernisses es cognoscite cancerogene in animales experimental. Lor inhalation, que non es completamente evitable durante lor application, pare esser responsabile pro varie disordines pulmonar secundo un reporto per Dr. B. G. Edelson de Folkestone e Dover in Anglaterra. In un de su casos Dr. Edelson notava le presenta multiple de allargate nodos pulmono-lymphatic e de altere symptoms que habeva nullos obvie etiologia e que recedeva post le discontinuation del uso de vernisse capillar. Tamen, si o non iste patiente ha suffrite permanente effectos adverse de manifestation a longe vista non es determinabile al tempore presente. Dr. Edelson recommenda le uso de mascas a gas durante le application de vernisses capillar del typo a aerosolisation.

**Oceanographia.**—Membros del personal scientific al Station Experimental China Lake (California) del Marina Statounitense ha elaborate planos pro un submarino de exploration que va utilisar certes del principios stabilite per Auguste Picard in explorationes con su famose bathyscaphos sed que essera liberelemente mobile e capace a attinger omne regiones del oceano, in omne partes del mundo e a omne profundores que existe.

**Cosmopathologia.**—In un recente discurso a Philadelphia, Dr. Trexler del Universitate Notre Dame signalava que "tres seculos de morbo e morte" a ambe lateres del Atlantico sequeva le discoperta del Nove Mundo. Isto, secundo Dr. Trexler, esseva le effecto del transmigration de micro-organismos a in territorios ubi illos esseva immunologicamente nove e ergo potentissime. Con iste observationes Dr. Trexler introduceva le question del consequentias microbiologic del veniente viages cosmic. Que va esser le effecto pathogenic de micro-organismos terrestre super le vita vegetal e animal in altere planetas? E qual garantia possede nos que nostre medicina va poter mastrar le effectos pathogenic de micro-organismos transferite al terra ab altere corpores celeste? Le astronauta del futuro, insiste Dr. Trexler, va deber acceptar un systema de quarantenas multo plus stricte que ullo unquam praticate in nostre passate historia terrestre.

**Agricultura.**—Lacte de vacca contine un substantia que protege plantas de tomato e tabaco contra le morbo viral que es cognoscite como mosaico. Le agente antimosaic in le lacte pare esser un non ancora identificate globulina que es presente in le parte del lacte que remane post su discrimination. Experimentos al Collegio Statal de Nord-Carolina ha monstrate que le dissemination de mosaico es grandemente reducite quando le obreros agricultural qui manipula le plantas in question es instruite a lavar lor manos in lacte discretamente.

**Phytopathologia.**—Plantas inficite per un micropathogeno reage per un respiration accen-

lerate, secundo un reporto presentate al recente assemblea del Instituto American pro le Scientias Biologic.

**Pharmaceutica.**—Le processo del revestimento de pillulas (con substantias protectori o aromatic) es simplicite e perfectionate per un nove machina in que le pillulas es sublevate per un forte corrente de aere e exponite in "volo" a un aspersio del substantia revestitori que deveni sic e dur ante que le pillulas re-tocca un superficie solide. Le machina es le invention de Dr. D. E. Wurster del Universitate Wisconsin.

**Astronomia.**—Dra. N. G. Roman del Statounitense Administration Aero- e Astronautic ha calculate que telescopios nunc existente sufficere pro determinar le presenta o absentia de planetas in le orbitas de al minus le 5 o 6 plus proxime stellas fixe, si le atmosfera del terra non disturbava le observation. Ergo Dra. Roman propone installar (o al minus: planar installar) telescopios in le luna que non ha un atmosfera. Ab le luna, secundo Dra. Roman, planetas de Alpha Centauri, Sirius, Arcturus, etc., providite que tales existe, es clarimente observabile.

**Viologia.**—Dr. K. Maromrosch del Instituto Rockefeller a New York ha reportate le remarcabile observation que un certe insecto, que es normalmente invencibile per extractos de asteres, spinacia, carotas, etc., comencia prosperar con un dieta de ille mesme extractos si tosto que illo ha ingerite le virus que es le principal pathogeno afficente carotas e le altere plantas mentionate. Dr. Maromrosch crede que su discoperta aperir un novissime campo de recerca: le campo del effectos benefice de virus.

**Recercas de Cancere.**—Es reportate per Dr. W. T. Szybalski del Instituto Rutgers pro Microbiologia que cellulas tractate con 5-bromodisoxuridina deveni sensibilissime al effectos destructori de irradiation ionisante. In plure experimentos cellulas tractate con le mentionate agente chimic esseva destruite per un irradiation de un fortia de non plus que un decimo del fortia requirite pro destruct cellulas de controllo non assi tractate. Iste constatation deveni importantissime pro le canceroterapia proque 5-bromodisoxuridina es un substantia que se fixa preferentialmente in cellulas in stato de proliferation, incluse—evidentemente—le cellulas de histos cancerose.

**Recercas de Cancere.**—In un studio del familias de 228 patientes con cancro del prostata, Dr. Ch. M. Woolf del Universitate Utah ha constatate un frequentia de morte per le mesme morbo amontante a tres vices le correspondente frequentia in un gruppo de controllo simile in sexo, etate, e provenientia geographic. Etiam altere conceres esseva anormalmente preminente in le familias studiate, sed iste predominantia non esseva statisticamente significativa. Il pare sequer que cancro del prostata es co-conditionate (ben que non directemente causate) per factores genetic. Simile constatationes ha essite facite per altere auctores con respecto a cancro mammari e cancro del stomacho.

**Oceanographia.**—Dr. G. Khandzhua del Universitate Moscova ha construite un apparato que registra simultaneamente, continuamente, e con un altissime grado le accurate le salinitate e le temperature del aqua in que illo es submergite e le distantia del loco de registration ab le superficie. Le apparato ha essite usate con bon successo a 18 stationes durante un recente expedition antarctic. Illo ha le belle nomine de bathythermohalinographo.

Science News Letter, September 26, 1959

### GENERAL SCIENCE

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## VITAL STATISTICS

## Widowed Die Sooner

NATIONAL VITAL statistics based on deaths in the U. S. in 1949-51 plus the Census of 1950, reveal that those persons under age 35 who are widowed have a strikingly higher mortality rate than their married counterparts of the same age.

But the poorest risk, relatively, falls to the white widowed male between the ages of 25 and 34. His chances of dying are 4.31 times as great as are those of his married buddy of the same age, Dr. Arthur S. Kraus of the State of Maryland Department of Health says in the *Journal of Chronic Diseases* (Sept.). Dr. Abraham M. Lilienfeld of the Johns Hopkins University School of Hygiene and Public Health co-authored the paper.

The next highest risk occurs in the age group 20 to 24. The risk for a young white man in this group is almost four times that of his married counterpart. This applies also to the nonwhite widowed males in the 25 to 34 age group. Their risk was 3.88.

Next on the list are widowed white females, ages 20 to 24, whose death rates were 3.70 times the rate of their married girl friends of the same age and race.

Among the older age groups, 35 years

and over, the death rates of the widowed, compared to the married, decreased steadily with increasing age, Dr. Kraus explains.

Statistics from the 1950 census revealed that there were at that time, 46,830 widowed men and women under the age of 25 in the U. S. Of these, 2,200 were not more than 14 years of age.

Further study of figures from 1949 to 1951 revealed that the major causes of death for which the young widowed had a much greater risk than the married were arteriosclerotic heart disease, hypertension with heart disease, general arteriosclerosis, vascular lesions of the central nervous system and tuberculosis.

The researchers suggest these three possible explanations for the higher death rates among the widowed: individuals with a short survival potential tend to choose like mates; the widowed and his deceased spouse shared unfavorable environmental factors which led to the death of the first spouse, and finally, perhaps the grief, new worries, responsibilities and alterations in one's daily life have a damaging effect upon the widowed.

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## GEOGRAPHY

## Flares Measure Coastline

A BRIEF BURST of light in a clear night sky could enable geodesists to pinpoint Europe's geographic position within 50 to 90 feet.

Scientists at Ohio State University at Columbus have recommended to the Air Force Cambridge Research Center at Bedford, Mass., that the Government launch flare-bearing rockets from ships well at sea for telescopic studies. These would measure more accurately the distances between North America and Europe, and South America and Africa.

The scientists proposed stationing two ships 620 miles apart in the North Atlantic on a north-south line midway between Europe and North America. On one night, one ship would fire a rocket, and telescopic cameras in Labrador and Newfoundland and northern Scotland and southern England would photograph its flare against known background stars. The process would be repeated the following night when the second ship sent up its flare-bearing rocket. By triangulation methods, the distance between the two continents could be more accurately determined.

At present, the Ohio State scientists pointed out, it is believed various national geodetic systems have errors up to one mile on continents and between continents, and errors up to 10 miles in positions of ocean islands. Accurate, standard distances between continents are now needed for aerial and underwater navigation.

The formal proposal was made by Dr.

Weikko A. Heiskanen and his group at Ohio State University Research Center's Mapping and Charting Research Laboratory.

Previous attempts to obtain accurate measurements were made during eclipses of 1945, 1947, 1948, 1954, and 1955, but none was successful. It will not be until the year 2151 when another eclipse will occur as good as the 1954 eclipse which was obscured by clouds. A rocket experiment presumably would give observers more control over the weather and could yield satisfactory results.

Science News Letter, September 26, 1959

## SURGERY

## Many Americans Suffer "Television Bottom"

MANY AMERICANS are suffering from a condition called "television bottom."

The medical term for the condition is coccygodynia, pain in the tail of the spine. It arises frequently from spending long periods of time before the television set, Dr. Wilford L. Cooper, Lexington, Ky., surgeon, explained at the International College of Surgeons meeting in Chicago.

The surgeon also blamed long auto drives for many of the pains. Patients, he said, complain of pain in the coccyx, the tail bone of the spinal column. This is often accompanied by hip pain and leg pain. It is caused by pressure on the sciatic or gluteal nerve.

Women seem to be more susceptible than

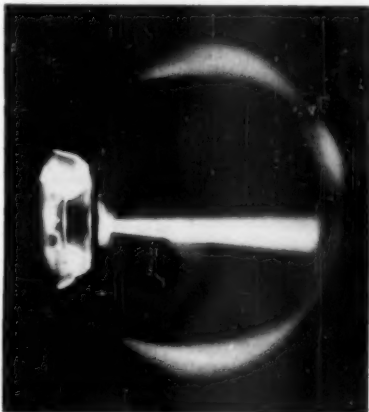
men, he pointed out. Almost without exception, patients say that a long automobile ride or prolonged sitting will cause them pain. They are not able to lie on the back comfortably at night.

Most patients habitually sit with a poor posture, with the lower portion of the back arched out instead of arched inward, toward the stomach. They slump in a chair and allow the middle portion of the sacrum and coccyx to press against a chair, according to Dr. Cooper's description. The patient usually sits down and gets up slowly and carefully.

There is hope for these people, however. Of 100 patients, 62 were treated by massage only. This treatment was given an average of six times over a period of three to four weeks. Relief came to 50 patients, 80% of that group.

Heat treatments plus correct posture instructions were given to 28 patients, resulting in relief for 25 of them. Ten were given massages and surgical treatment of infections, relieving nine.

Science News Letter, September 26, 1959



**ION TEST**—An ion thrust device, developed by Rocketdyne, produces ion beam during a test run in a vacuum tank which simulates outer space conditions. An ion engine has been suggested to power interplanetary space vehicles.

## ENGINEERING

## Dew-Line Dome Rises In Test for Arctic Use

See Front Cover

A GIANT dome, 140 feet in diameter on top of a three-story building, will provide storm protection for radar antennas designed to track missiles in the U.S. Air Force's Ballistic Missile Early Warning System in the Arctic.

The prototype, shown on the cover of this week's *SCIENCE NEWS LETTER*, is being built east of the Camden-Philadelphia area. The dome is made of paper faced with plastic-impregnated fiber glass.

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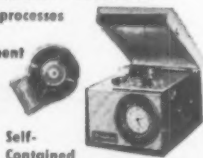
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## ENGINEERING

# Advances in 1960 Cars

A rear engine, electroluminescent lighting for dashboards, new tire treads, improved trim and a new method for suspending the automobile body are featured in 1960 cars.

ALONG WITH other advances in 1960 cars, one will feature a rear engine.

General Motors' Corvair, competing in the small-car market, will feature its air-cooled engine, mostly aluminum, in the rear. This is said to help maintain a 40% to 60% weight distribution ratio on the front and rear wheels, respectively, for high stability. The engine's six cylinders are arranged to work in a horizontal position.

Ford's six-cylinder, 90-horsepower Falcon will offer fuel economy of 30 miles to the gallon under normal driving conditions.

New electroluminescent lighting on Chrysler and Imperial dashboards will cut instrument glare at night. In the new type of lighting, said to last 10 times longer than an ordinary incandescent light bulb, an electric current is made to flow through phosphors on glass to produce a soft glow of easily visible instrument readings.

Oldsmobile bodies will be suspended from "nodal points" on the frame to create smoother rides for passengers. This grew

out of a hobby of Lowell Kintigh, an assistant chief engineer, who likes to analyze and control vibrations in his spare time. He found that there are nodal points on an auto frame where vibrations are minimum. By mounting the body on the frame at those points, minimum road vibrations and noise are transmitted to the passengers.

New tire treads made of a rubber derivative of petroleum, called styrene butadiene, are aimed at giving a softer ride in new Chevrolets. Tread life is increased 10% to 20%, the company said. Squeal is reduced by the new material also.

Trim on the Ford line will stand up better against the sun's heat, salt spray and heavy humidity because of recent corrosion research. Better trim, the company said, will result from up to 50% more nickel for electroplated zinc die-cast and steel parts, better controls on the plating process during manufacture. A new aluminum alloy provides high luster, despite heavier anti-corrosion anodized coatings.

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## ZOOLOGY

# Mice Threat "Down-Under"

AT THE MOMENT the principal threat to the man-on-the-land in Australia is not the marauding kangaroo, but the mighty mouse.

Queensland's Darling Downs area has been ravaged for weeks by the mouse plague which continues unabated.

The reports are almost as bad as those of the big mouse plague of 1917. Every wheat and haystack in the Riverina area of southwest New South Wales was then black with scampering mice.

At Ganmain railway station men demolished a mice-riddled stack of bagged wheat, and a brown flood poured across the road and invaded the town. Today similar scenes are being enacted in Queensland.

Householders are trying to hold back the invaders with shovels. Baits and traps are set, but still night after night the mice come on.

In the 1917 plague some farmers stood the posts of their beds in kerosene tins to protect themselves and their mattresses. But the mice still got into the mattresses.

As in the earlier plague of 1903, the pest today is *Mus musculus*, the acclimatized European house mouse. The European mouse has "gone bush" in Australia, and in the mild climate continues to thrive.

The 1917 plague was caused by the accumulation of huge wheat stocks in railway yards and on docks due to the shipping shortage in World War I. At one dump 14,000,000 bags, enough to fill 25

ships, were stacked. In South Australia mice appeared simultaneously over an area of 700 square miles.

The female mouse produces a litter of between four and eight in 21 days. In this super-abundance of wheat, the mouse race multiplied and multiplied.

Today wheat is held in dumps because of the lack of markets overseas. Silo wheat is free from the mice plague.

So many mice were destroyed in 1917 that the numbers were measured in tons, 60,000 mice to the ton.

In northwest Victoria an official destruction campaign bagged 600 tons or 36,000,000 mice in six weeks. At one town in Victoria 6,500,000 mice were destroyed in one night.

Most successful way of killing mice in 1917 was by using a device known as a "double fence". This allowed mice in an enclosure, but not out of it. Inside they were poisoned, fumigated, or driven into pits and killed with carbon bisulfide.

Cold weather finally ended the mouse invasion, and since then the mice have been kept down by making farm buildings and silos mouse-proof.

Devastating as the present plague is, old timers say it is nothing like as bad as the 1917 one, when rodent extermination was well-organized for the first time in Australia.

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## DENTISTRY

# Fluoridation Growing

FLUORIDATION of community water supplies is becoming increasingly popular throughout the world.

Seven European countries are already adding fluorides to their water supplies, Dr. W. Stewart Ross, London, England, said in a panel discussion at the American Dental Association meeting in New York.

The countries are Belgium, The Netherlands, Sweden, Russia, Czechoslovakia, Great Britain and the German Federal Republic. Interest in fluoridation runs high in South America and Europe, he said. However, not all countries are adding fluorides to their water supplies.

The British dentist predicted that once water fluoridation is instituted on a national basis in one or two countries in Europe where the majority of inhabitants get their water "on tap," other countries will follow suit.

One reason the adoption of fluoridation has taken so long in Europe is that Europeans believe it necessary to conduct their own investigations into the decay-inhibiting properties of fluorides.

Despite the uniform results obtained in widespread United States studies, investigations are being conducted in Europe because drinking and eating habits vary from country to country and democratic feeling exists which tells Europeans "to let us see for ourselves."

Another panelist, Dr. Juan Chaneles, Buenos Aires, said that several South American countries have decided to adopt fluoridation, which he described as "one of

the few rational procedures in the fight against dental caries."

The procedure is being tested in several small towns in Brazil, Chile, Colombia, Paraguay, and Venezuela. Adoption of fluoridation in South American countries has been slow due to a lack of necessary funds and the urgency of sanitary problems, he said.

## Stress Injures Teeth

EMOTIONAL stress can cause a person to lose his teeth or at least damage his gums.

Persons who are in the habit of grinding their teeth while they are under emotional stress can damage their gums. This can lead to a loss of teeth, Dr. James S. Millsap of Houston, Texas, told colleagues attending the Dental Association meeting.

A review of the findings of several studies dealing with the causes of excessive wear of the teeth revealed that:

When the jaws are in rest position, the teeth are apart.

Teeth do not come into contact during chewing of food.

Tooth contact occurs only during swallowing.

During the chewing of food, the forces applied to the teeth are relatively small.

We use our teeth in normal function less than one hour a day.

Friction of tooth enamel against tooth enamel is the only thing that will give excessive wear on the biting surfaces.

According to these studies, wear and tear

of the teeth does not occur during the chewing process. Thus the wear that the dentist sees must be produced when the teeth are used for something other than chewing, he reasoned.

Habits are the principal cause of the non-chewing use of teeth, Dr. Millsap continued. These habits may be divided into three groups: habit neuroses, caused by psychological stress; occupational habits, an individual using his teeth in the performance of his job, and a broad group of habits including everything from opening bottle caps with the teeth to pipe smoking.

These habits may be responsible for specific changes in the tissues supporting the teeth. These changes eventually lead to loss of teeth.

## Hypnotism Helps Dentist

HYPNOTISM can help acceptance of new false teeth.

The dentist can use hypnosis when replacing all of a patient's natural teeth, Dr. Allyn S. Abramson, Los Angeles dentist, told the American Dental Association.

Dentists can create a willingness on the part of the patient "to accept without reservations the transition from natural to artificial teeth" by placing the patient in a light trance before extracting the teeth, he said. A deep trance, however, is not recommended for dental surgery.

Pre-surgical anguish can often be abolished by giving the patient tranquilizers. A feeling of well being can be maintained by continuing such medication after surgery, he added.

The transition from natural to false teeth is a crisis for many patients, Dr. Arthur W. Schultz, also of Los Angeles, said.

The use of diagnostic charts will produce gratifying results when all teeth have to be replaced, Dr. Schultz said. The charts should tabulate the patient's medical history as well as his current physical condition, including such important items as blood pressure, heart condition, digestive disturbances and allergies.

Science News Letter, September 26, 1959

## PSYCHOLOGY

## Marjorie Van De Water Given Writer's Award

MARJORIE Van de Water, psychology writer for SCIENCE SERVICE, has won the 1959 Science Writer's Prize awarded by the American Psychological Foundation for her "illustrious career of interpreting psychology popularly" both in books and in the daily press.

The Foundation's Trustees altered their customary procedure for the award as the prize of \$500 is normally given for an outstanding reportorial job from the preceding year.

Miss Van de Water was honored at the American Psychological Association meeting in Cincinnati. The Foundation's Gold Medal was awarded to Prof. E. G. Boring of Harvard University; Miss Van de Water and Prof. Boring were collaborators on *Psychology for the Fighting Man*.



**SEAT-SUIT**—Suspended in boost or blastoff position, Gary Grabam, Boeing Airplane Company engineer, models the "hammock-seat" restraint system he developed. The device is made of nylon net with steel cables sewn into it seems. Engineer Peter Downey operates the cabin simulator.



## PHYSICS

**Earth Surrounded by Banana-Shaped Shells**

THE EARTH is surrounded by banana-shaped shells extending some 20,000 miles in space. The shells are regions of higher ionization than the surroundings.

Radio signals being broadcast by the Explorer VI "paddlewheel" satellite launched early in August from Cape Canaveral may confirm existence of these ducts. If so, such strange radio effects as "multiple-path whistlers" would be explained, and future radio explorations of space made easier. (See SNL, Aug. 15, p. 100.)

Prof. Robert A. Helliwell of Stanford University, Stanford, Calif., reported his new theory on the distribution of ionized matter in outer space to the American Physical Society meeting in Honolulu, Hawaii.

A very sensitive receiver in Explorer VI is being used to verify the theory. Signals at the very low frequency of 15.5 kilocycles from the Navy's transmitter at Annapolis, Md., are being received in the satellite, then relayed to the ground by telemeter.

Dr. Helliwell suggested the banana-shaped shells are aligned with the earth's magnetic field. Although their ionization may be only 10% to 20% stronger than the surrounding regions, this is adequate to form a channel that conducts radio signals with efficiency.

Science News Letter, September 26, 1959

## SURGERY

**Plastic Tube Restores Hearing in Some Deaf**

A TINY TUBE of plastic, smaller than a pencil point, can restore hearing to nine out of ten people who have a certain kind of deafness.

The new development was described by Dr. Alan A. Scheer, New York University College of Medicine, at the International College of Surgeons meeting in Chicago.

The tiny hollow plastic tube is producing dramatic results in patients who have lost their hearing from formation of spongy bone in the middle ear, which scientists call otosclerosis. More than 1,000,000 persons in the U. S. are deaf due to this bony formation and hardening that locks the ear mechanisms so rigidly that they cannot vibrate to transmit sounds. In 270 patients with deafness from the bony deposits, the plastic tube restored hearing, either partially or completely, in nine out of ten, Dr. Scheer said.

With older techniques, only about five out of ten patients could be helped permanently.

The tube is so tiny, he said, the surgeon has to use a microscope while inserting it into the ear. The surgeon makes an incision in the ear canal, folds back half of the ear drum, loosens the hardened internal workings of the ear. He then tucks in the almost invisible plastic tube and leaves it there in the innermost hidden depths of the ear, to carry sound vibrations to the nerves.

The plastic tube replaces the stapes, one

of the ear bones that was not functioning properly, and acts as a vibrating mechanism.

"The very instant we put the eardrum back," Dr. Scheer said, "the patient hears the booming amplification of sound as though he had just entered a huge auditorium."

The new technique restores hearing to many patients who could not be helped before and there are almost no relapses back to deafness, after the operation, as there were with former methods.

Although the plastic tube surgery is an entirely new technique, it will be done routinely by many doctors within a short time, he predicted. The technique can only be used in deafness caused by otosclerosis. It is not effective when the hearing nerves have been damaged.

Science News Letter, September 26, 1959

## ROCKETS AND MISSILES

**U. S. Not Yet Able To Intercept Missiles**

THE UNITED States is not yet able to intercept guided missiles fired at American targets.

At best, interception of incoming missiles would be extremely difficult but today is "impossible," Lt. Gen. B. A. Schriever of the Air Force's Air Research and Development Command told lawyers attending the American Bar Association meeting in Miami, Fla.

Because ballistic missiles can travel 5,000 miles in 30 minutes, the U. S. needs an early warning system that can spot the missile attack when launched.

Such a system might use satellite vehicles, he suggested.

A second much-needed link in the warning chain is a way for transmitting needed information to military headquarters when a missile attack is launched. Development of such systems now carries a high-priority military rating, he said.

He indicated that a "decisive" strategic advantage could go to the first nation to achieve the ability to maneuver, communicate and carry out military missions in and from space.

He described ARDC's Dyna-Soar project in which a manned glider may be boosted out of the earth's atmosphere by intercontinental ballistic missile rocket engines. Dyna-Soar would have a global range and the ability to land where the vehicle's pilot chooses.

"It is fairly obvious that the military advantages of such a vehicle are tremendous," said Gen. Schriever.

"It would provide the crucial element of human discretion, along with an almost infinite choice of flight paths. It could operate at lower altitudes than satellites, and yet would be less vulnerable to enemy tracking and destruction."

Later versions of the Dyna-Soar vehicle could be made to orbit the earth many times and then re-enter the atmosphere for a specific mission. Such a vehicle, he said, could be used as a satellite interceptor to inspect, board, disable and possibly destroy hostile satellites.

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**IN SCIENCE**

## ENGINEERING

**Automation in Infancy Says Head of NBS**

AUTOMATION is still in its infancy. Dr. Allen V. Astin, director of the National Bureau of Standards, said, and "we still have a long way to go before we will have a completely integrated and automated industry."

To bring automation closer to maturity, Dr. Astin reported at ceremonies dedicating a new \$2,000,000 research and development center of the Leeds & Northrup Company, in North Wales, Pa., both technology and research must contribute to the advance of automatic instrumentation.

To meet technological demands and competition, all firms should maintain staffs of scientists and provide them with tools for studying business-improving methods, he said.

The technological advancement of business, he said, depends on "a proper state of mind, that of seeking to improve one's product, to develop new ones, and to improve basic production processes." This he considered a prerequisite to a vigorous economy.

Dr. Astin emphasized that instrumentation is the key to all experimental research. It provides the link between research and technology and can be important for business and technological growth as well as to the future of big and little business.

Science News Letter, September 26, 1959

## ENGINEERING

**New Jet-Engine Fuels Boost Plane Performance**

NEW JET-ENGINE fuels that burn less brightly have been developed at New York to give airplanes more flight per gallon of fuel.

The secret of the new fuels developed by Texaco, Inc., is their high "L.N."—a number expressing luminosity of the combustion flame. Most present jet fuels have low luminometer numbers of 45 to 65. The new fuels are rated upward from 135.

Higher L.N.-rated fuels are expected to extend engine life and sharply reduce exhaust smoke on take-off. In a luminous flame, such as that of kerosene, incandescent molecular fragments are formed that radiate heat. This can seriously increase temperatures inside a jet engine without adding power.

By designing the engine to use high luminometer number fuels and by burning them at higher temperatures, greater thrust can be developed at take-off, said L. C. Kemp Jr., vice-president of Texaco research. In addition, the jet could carry heavier payloads.

Science News Letter, September 26, 1959



# CE FIELDS

## ASTRONOMY

### Detection of Planets Of Other Stars Proposed

DIRECT DETECTION of planets of other stars billions of miles from the sun by a large telescope on the moon is possible, an astronomer from the U. S. National Aeronautics and Space Administration reported.

Dr. Nancy G. Roman has calculated that if the nearest star outside the solar system had an airless planet like the moon, the planets Venus, earth, Jupiter and Saturn would be visible from it using present methods.

Other stars besides Alpha Centauri, which is 4.3 light years from the earth or about 26 million million miles, from which solar system planets would be visible under such conditions include Sirius, Procyon, Altair and Arcturus. All five stars are bright, easily visible to the naked eye. Sirius and Procyon are visual double stars.

Dr. Roman, therefore, concludes that stars such as these five are the "logical" ones to test for the presence of planets. She suggested at the American Astronomical Society meeting in Toronto using a large telescope on the moon, because there no atmosphere interferes with viewing.

The experiment is a time-consuming one and could not be performed at all without a large, accurately guided telescope, Dr. Roman said. A telescope on an artificial earth satellite would probably not allow either the necessary size nor the long periods required for such an experiment.

Science News Letter, September 26, 1959

## ELECTRONICS

### Discover Silicon Carbide Is Good Electron Source

BETTER ELECTRONIC TUBES that glow blue when working, instead of red, may result from the discovery that silicon carbide is a good source of electrons.

Drs. W. J. Choyke and Lyle Patrick of Westinghouse Research Laboratories, Pittsburgh, have found that silicon carbide, used as an abrasive in grinding wheels, can emit a heavy stream of electrons when excited.

Dr. Clarence Zener, director of research, speculated that electronic tubes might be built using extremely pure silicon carbide as a replacement for hot cathodes used today. In effect, such a development would be transistorizing the vacuum tube to achieve inherent advantages of both transistor and tube.

Transistors are tiny solid-state devices that can replace vacuum tubes in some jobs. They require little power to operate and hence give off little heat.

In contrast, the ordinary radio tube requires much power for heating its cathode to red hot temperatures so that electrons will boil off and make the tube work. This large amount of power makes the tube less effi-

cient than the transistor. The heat given off becomes a serious handicap in some cases.

By replacing the hot cathode structure with a cool unit of pure silicon carbide, little power would be required for the tube and little heat would be given off. Through this idea, a better and less complex TV picture tube might be developed.

When enough voltage is applied at a junction point on the pure silicon carbide, the material's normal electrical resistance breaks down. Small blue spots of light suddenly appear near the junction. Electrons escape from these bright, light-emitting spots, which are only 50-millionths of an inch in diameter. The spots have yielded currents up to one-millionth of an ampere. This density is "quite comparable" to that from the cathode of a typical electronic tube, Dr. Zener said.

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## MEDICINE

### Heredity Appears Cause Of Drooping Eyelids

DROOPING eyelids appear to be hereditary, a Baltimore plastic surgeon suggested.

Ptoxis, drooping lids, can be congenital or the result of an illness, Dr. Edward A. Kitlowski, University of Maryland School of Medicine, reported to the International College of Surgeons meeting in Chicago.

The congenital type is the most common and usually affects both eyes, he added. The acquired type may come about overnight as the result of the loss of power to elevate the eyelids. The paralysis of the levator muscle, which controls the movement of the lids, may be a temporary one, and clear up in a week or ten days.

Dr. Kitlowski explained that eyelids in the unborn start to develop as folds of skin in about the seventh week of pregnancy and completely cover the eyes in about the ninth week. The lids are fused until the sixth or seventh month when they begin to open. When they fail to function properly at birth, it is usually due to a mass contraction of the muscles supplied by the so-called third nerve.

"The correction of the deformity resolves itself in using muscles to replace the function of the levators and by voluntary action of the patient to permit the eyelids to elevate when desired," he said.

The muscle of the scalp, which in its normal function is an accessory muscle of lid elevation, is used to provide the power. Fascia, a sheet of tissue which invests and connects muscle, is taken from the patient's hip, threaded beneath the folds of the forehead, and tightened to elevate the lids to the desired level. The lids will not close completely for a few weeks after the operation.

"The operative procedure is most desirable to offer the patient the best cosmetic results to improve vision," Dr. Kitlowski said. Surgery should not be contemplated until it is reasonably sure that there will be no improvement in the acquired type of ptoxis, he concluded.

Science News Letter, September 26, 1959

## CHEMISTRY

### Chemical as Effective As Pruning Shears

SCIENTISTS have developed a chemical that may be as effective as pruning shears in keeping ornamental plants and hedges well-trimmed.

Chandler P. North, Drs. George F. Ryan and Arthur Wallace, horticulturists at the University of California, Los Angeles, have been experimenting with the chemical which is known as maleic hydrazide (MH).

They have found that MH solution sprayed on such plants as pyracantha, eugenia and ivies, honeysuckle, star jasmine, and fuchsia will effectively control their growth for periods up to six weeks.

Best results have been obtained when plants are trimmed and new growth is allowed to re-cover the trimmed areas before the spray is applied. When new normal growth appears, spraying should be repeated at four- to six-week intervals.

Effective MH concentrations in the solution have been worked out for a number of plants. These range from one to seven teaspoonsful per gallon. However, effective concentrations may vary with climatic regions, and since excessive concentrations cause excessive leaf and fruit drop, the following procedure is recommended:

Spray a small part of a plant with low concentration solution (0.005 percent solution for herbaceous plants and 0.15 percent for woody ones). Wait a week, if spray has stopped growth without excessive leaf drop, then spray the whole plant. If growth is not controlled, the MH concentration may be slightly increased.

Limited trials have indicated that MH may be used in conjunction with insecticides.

Science News Letter, September 26, 1959

## PHARMACOLOGY

### Pills Coated While Suspended in Air

A PILL COATING MACHINE that may replace the present pan coating method has been invented by Prof. Dale E. Wurster of the University of Wisconsin School of Pharmacy.

The machine suspends pills in the air forced into it by a blower, while atomizers inject a carefully controlled stream of coating material. The blast of air causes the coatings to dry immediately.

Better vitamins may also result from the new invention, because the machine can coat small vitamin granules with a protective film that prevents destruction of the chemical by air.

Present pill coating methods involve pouring coating material on pills revolving in a turning drum and a separate drying process is required.

Prof. Wurster's work was supported by the Wisconsin Alumni Research Foundation, which holds patents on the machine. The foundation plans to make the coating process available to industry at a low royalty.

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## ASTRONOMY

# Total Solar Eclipse Coming

A total solar eclipse, taking place on Oct. 2, is a highlight of the astronomical year. It will be visible in part of the United States.

By JAMES STOKLEY

THE MAIN feature on the astronomical program for October is the first total eclipse of the sun visible in any part of the United States or Canada since 1954 and the last until 1970. On Friday morning, Oct. 2, people who live east of a line extending approximately from the eastern shore of Lake Michigan to Tallahassee, Fla., will see the sun rise at least partially eclipsed by the moon. That is, they will see it if the sky is clear along the eastern horizon.

And, for a few favored locations in Massachusetts (including Boston) and southern New Hampshire, the rising sun will be totally eclipsed. It will be completely hidden by the moon and its outermost layer, the corona, will be visible around it. With the intense glare of the solar disc cut off, the faint corona comes into view.

Of course, clouds or early-morning mists may well interfere with the view of the total eclipse around Boston. However, from Massachusetts, the path along which it is visible extends over the Atlantic Ocean, toward the Canary Islands and the coast of Africa. There a much better view is likely. Many astronomical expeditions have traveled to these locations, to make the observations that can best be carried out when the sun is thus hidden.

## Jupiter and Saturn Seen

As for the evening skies of October, two bright planets are visible, but you will have to look rather early to see one of them. Jupiter, the brighter, is in the constellation of Scorpius, the scorpion, and sets, at the beginning of October, only two hours after sunset. Thus it does not appear on the accompanying maps, which depict the sky as it appears about 10 p.m. your own kind of standard time (add one hour for daylight saving time) at the first of October, an hour earlier at the middle and two hours earlier at the end.

Jupiter is now about seven and a half times as bright as Saturn, the other planet, which is in Sagittarius, the archer. Part of this constellation is shown on our maps, but not that in which Saturn stands. This planet sets in early October about four hours after the sun, just a little before the times for which our maps are drawn.

The brightest star of these evenings is Vega, high in the west in Lyra, the lyre. Second brightest is Capella, in Auriga, the charioteer, which is in the northeast. Then comes Altair, toward the southwest, in aquila, the eagle, a little to the left of Lyra. And above Lyra (shown partly on the

northern map and partly on the southern) is Cygnus, the swan, with the star called Deneb.

Low in the east Taurus, the bull, is coming into view, with Aldebaran. While this star, like the others mentioned, is of the first magnitude, its low altitude makes it appear fainter than it would when higher in the sky. This is true also of Fomalhaut, in Piscis Austrinus, the southern fish, low in the south.

Although it contains no first-magnitude stars, a prominent October constellation is Pegasus, the winged horse, which is high in the south. In this is the "Great Square" and if you know it, you will be able to locate several other groups. Alpheratz, the star in the upper left-hand corner of the square, is in the next-door constellation of Andromeda, the chained princess. Below the square are the fishes, Pisces. The line of stars beginning with Markab, in the lower righthand corner of the square, is supposed to form the horse's head, and below it is Aquarius, the water-carrier. And off to the right of Pegasus is Cygnus, which we have already mentioned.

Although Jupiter and Saturn are the only evening planets at present, Venus is a brilliant object in the east after it rises about

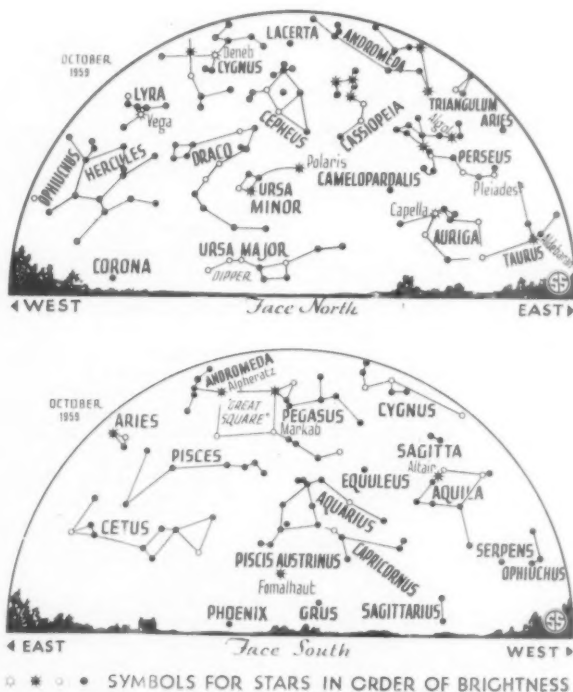
three hours before the sun. It is in the constellation of Leo, the lion, and it will be of maximum brilliance on Oct. 8. After that it will gradually fade and will go behind the sun next June, reappearing next autumn as a brilliant evening star. Mercury and Mars are now too nearly in line with the sun to be seen; the latter passes behind it on Oct. 29.

Referring again to the total eclipse, it is rather curious that the last two such events which were visible in the United States also were seen just after sunrise.

A total eclipse of the sun occurs when the moon's shadow sweeps across the earth. Because the sun is so much bigger than the moon the lunar shadow tapers to a point at about our distance. Sometimes it fails to reach earth at all. If at such a time the moon passes in front of the sun that body is not completely hidden; there is a ring of the solar disc visible around the moon, and we have what is called an annular eclipse.

But with a total eclipse, the tip of the shadow does reach the earth. It may be a hundred miles or so in diameter, and it sweeps across land and sea, from west to east, tracing out the long ribbon-shaped path of totality, from which the total eclipse is visible. Over a much larger area there is a partial eclipse, with the moon coming only partly in front of the sun.

On July 9, 1945, the shadow tip touched earth at sunrise in Idaho, so the path of totality started there and went northeast-



ward across Canada and Hudson Bay. Then came one on June 30, 1954. The path began, at sunrise, in Nebraska and again it went to the northeast.

This time the shadow touches earth as the sun is rising a little to the west of Gardner, Mass. Then the path extends to the east, and on the coast it goes from Newbury, at the north, to Quincy, at the south. The center line, where the total eclipse lasts longest, about 55 seconds, goes through Marblehead. This is about 15 miles northeast of downtown Boston. But even from Marblehead the sun will be only about twice its own diameter above the sea horizon as totality starts. Even if the sky above is clear, a low-lying mist may well prevent observations.

Despite this, however, many astronomers from the Boston area, as well as from other parts of the United States, will set up instruments along the Massachusetts coast in this region, hoping that luck will be with them, and they will see this rare event.

But if they do not, they will only have to wait until 1970 for the next total eclipse of the sun visible in the United States. On March 7, the path of totality will pass across northern Florida and the coastline of Georgia and the Carolinas. This will be in mid-afternoon, so the weather chances should be fairly good.

## Celestial Time Table for October

Oct.	EST	
2	7:31 a.m.	New moon (total eclipse of sun visible about 5:50 a.m. from Mass., partial eclipse visible at sunrise over eastern U. S. and Canada).
	8:11 p.m.	Algol (variable star in Perseus) at minimum brightness.
4	4:00 p.m.	Moon nearest, distance 226,000 miles.
5	6:42 p.m.	Moon passes Jupiter.
7	11:59 p.m.	Moon passes Saturn.
8	6:00 a.m.	Venus at greatest brilliancy, in early morning sky.
16	10:58 a.m.	Full moon.
20	1:04 a.m.	Algol at minimum.
	2:00 p.m.	Moon farthest, distance 252,100 miles.
22	9:52 p.m.	Algol at minimum.
24	3:22 p.m.	Moon in last quarter.
25	6:41 p.m.	Algol at minimum.
28	8:40 a.m.	Moon passes Venus.
31	5:41 p.m.	New moon.

Subtract one hour for CST, two hours for MST, and three for PST.

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## Questions

**CHEMISTRY**—How does carrageenin aid in the treatment of peptic ulcers? p. 195.

**DENTISTRY**—How long do you use your teeth in normal function during the day? p. 199.

**GEOGRAPHY**—What device could help pinpoint Europe's geographic position within 50 to 90 feet? p. 197.

**PHYSICS**—Where are the banana-shaped shells that surround the earth? p. 200.

Photographs: Cover, Radio Corporation of America; p. 195, General Electric Company; p. 197, Rockefely-North American Aviation, Inc.; p. 199, Boeing Airplane Company; p. 208, Redman Corp.

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For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

**THE AMERICAN PETROLEUM INDUSTRY: The Age of Illumination 1859-1899**—Harold F. Williamson and Arnold R. Daum—*Northwestern Univ. Press*, 864 p., illus., \$7.50. Traces the growth of the industry from 1859 until the end of the nineteenth century, when the gasoline age began.

**ANIMAL HABITS**—George F. Mason—*Morrow*, 93 p., illus. by author, \$2.50. Interprets animal behavior for the general reader.

**ATLAS OF HUMAN ANATOMY**—Franz Frohse, Max Brodel and Leon Schlossberg—*Barnes*, 5th ed., 180 p., illus., \$4.50, paper \$2.95. Pocket size anatomy with many color charts and illustrations.

**CRANBROOK INSTITUTE OF SCIENCE: A History of its Founding and First Twenty-Five Years**—Lee A. White, Robert T. Hatt and others—*Cranbrook Inst. of Science*, 148 p., illus., \$5.

**THE FLIGHT OF THE SMALL WORLD**—Arnold Eiloart and Peter Elstob—*Norton*, 255 p., illus., \$4.50. Describes balloon flight by four Britishers across the Atlantic in 1958.

**FOOD, AMERICA'S BIGGEST BUSINESS**—Pauline Arnold and Percival White—*Holiday*, 338 p., illus. by Tom Funk, \$3.95. Surveys the development of the American food industry.

**THE LIBERAL ARTS AS VIEWED BY FACULTY MEMBERS IN PROFESSIONAL SCHOOLS**—Paul L.

Dressel, Lewis B. Mayhew and Earl J. McGrath—*Teachers College for Institute of Higher Education*, 68 p., paper, \$1.50. Analysis of education in nine types of professional schools.

**MATHEMATICS AND THE PHYSICAL WORLD**—Morris Kline—*Crown*, 482 p., illus., \$6. Presents the role of mathematics in the sciences, and shows how mathematics helps man explore regions his senses cannot perceive.

**THE NATIONAL VITAMIN FOUNDATION: Annual Report 1958**—Robert S. Goodhart, Scientific Dir.—*The Nat'l Vitamin Foundation*, 107 p., paper, free upon request direct to publisher, 149 E. 78th Street, New York 21, N. Y. Reports on scientific research in 1958.

**NATURE AND MAN'S FATE**—Garrett Hardin—*Rinehart*, 375 p., illus., \$6. An introduction to the principles of evolution, showing its implications for the future. A biologist-philosopher's views on atomic radiation, political inequality, defective inheritance, eugenics and genetic waste. Includes bibliography.

**THE NEUTRON STORY**—Donald J. Hughes—*Doubleday*, 158 p., illus., paper, 95¢. On the discovery and nature of the neutron inside an atom's nucleus, about radioisotopes, atomic patterns and the chain reaction.

**NEW PATHWAYS OF SCIENCE**—Sir Arthur Edington—*Univ. of Mich. Press*, 333 p., paper, \$1.95. Contains lectures delivered at Cornell University in 1934.

**THE OPEN SEA, ITS NATURAL HISTORY, PART II: Fish & Fisheries**, with chapters on Whales, Turtles and Animals of the Sea Floor—Sir Alister Hardy—*Houghton*, 322 p., illus., \$7.50. On the history and habits of fish in general, on life on the ocean floor, fish parasites, herring, haddock and the fishing industry.

**ORGANIZING PEACE IN THE NUCLEAR AGE**—Commission to Study the Organization of Peace—Arthur N. Holcombe, Chmn.—*N. Y. Univ. Press*, 245 p., \$3.75. This Eleventh Report of the Commission deals with the general problem of strengthening the United Nations.

**PATENTS & INVENTIONS: An Information Aid for Inventors**—U. S. Dept. of Commerce, Patent Office—*Govt. Print. Off.*, 25 p., paper, 15¢. Summarizes the basic steps of patenting and answers frequently asked questions.

**PLANETARIA AND THEIR USE FOR EDUCATION**—Miriam Jagger, Ed.—*Cranbrook Inst. of Science*, 200 p., illus., paper, \$3.50. Papers from a symposium held September 7-10, 1958, discussing planetarium programs, equipment and techniques.

**THE RULE OF NINE: Simplified and Ex-**

panded—William Wallace, Jr.—*U. S. Naval Institute*, 27 p., paper, 60¢. An easy, speedy way to check addition, subtraction, multiplication and division.

**THE RUN**—John Hay—*Doubleday*, 189 p., illus. by David Grose, \$3.95. Records the annual migration of alewives (members of the herring family) from the ocean to their inland breeding grounds. The author directs a children's nature museum on Cape Cod.

**A SELECTED LIST OF CAREER GUIDANCE PUBLICATIONS**—Hilary J. Deason, ass'd by Steven E. Bollt—*Am. Ass'n for the Advancement of Science*, 12 p., paper, single copies free upon request direct to publisher, 1515 Mass. Ave., N.W., Washington 5, D. C. Compiled for the various fields of pure and applied sciences.

**THE ST. LAWRENCE**—William Toyce—*Walch, H. Z.*, 296 p., illus. by Leo Rampen, \$4.50. Historical account of the river and the settlers along it from 1534 to our times.

**A SHORT HISTORY OF DENTISTRY**—Maurice Smith—*Roy Publ.*, 120 p., illus., \$3. Survey of dentistry from 5000 B.C. to the functioning of the British Health Service of today.

**SNOW SURVEYORS: Defenders Against Flood and Drought**—C. B. Colby—*Coward-McCann*, 48 p., illus., \$2. Depicts in photographs and words the story of the U. S. Department of Agriculture's snow survey, which helps anticipate floods and drought.

**SOVIET COMMITMENT TO EDUCATION: Report of the First Official U. S. Education Mission to the U.S.S.R., with an Analysis of Recent Educational Reforms**—*Office of Education (Govt. Print. Off.)*, 135 p., map, paper, 70¢. Survey of the Soviet educational system, from nurseries to the Academy of Sciences.

**SPACE HANDBOOK: Astronautics and its Applications**—Robert W. Buchheim and Staff of Rand Corp.—*Random House*, 330 p., illus., \$3.95. Updated edition of the space handbook originally prepared for the House Committee on Astronautics and Space Exploration early in 1959.

**THIS SCULPTURED EARTH: The Landscape of America**—John A. Shimer—*Columbia Univ. Press*, 255 p., illus., \$7.50. Tells the geologic story of the varied landscapes of the United States, and explains the characteristic geologic meaning of each type of landscape. For the general reader.

**THE VIRUSES, BIOCHEMICAL, BIOLOGICAL, AND BIOPHYSICAL PROPERTIES, Vol. 2: Plant and Bacterial Viruses**—F. M. Burnet and W. M. Stanley, Eds.—*Academic*, 408 p., illus., \$13. Latest research findings on the process of infection and virus synthesis, on the biochemistry of plant viruses, mutations, bacteriophages and lysogeny.

**SOVIET PHYSICS: Doklady, Vol. 3, No. 5. A Translation of the "Physics Sections" of the Proceedings of the Academy of Sciences of the USSR (Russian Original Vol. 122, Nos. 1-6)**—Vladimir Rojansky, Ed.—*Am. Inst. of Physics*, 167 p., illus., paper, \$7, subscription per year (6 issues) starting with Vol. 1, No. 1, \$35, libraries of non-prof. academic institutions \$15.

**ZINC: The Science and Technology of the Metal, its Alloys and Compounds**—C. H. Mathewson, Ed., chapters by specialists—*Reinhold*, 721 p., illus., \$19.50. Definitive monograph on the metallurgy, chemistry, extraction and uses of zinc, prepared in cooperation with the American Zinc Institute.

**YOUR CAREER IN ELECTRONICS 1960**—David A. Findlay, Ed.—*Ziff-Davis*, 130 p., illus., paper, \$1. Popular Electronics' career guide, tells how to test your electronics aptitude, what careers in electronics have to offer, and how to prepare for them.

Science News Letter, September 26, 1959

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**VIROLOGY****Hurdle Cleared in Path of Trachoma Immunization**

ONE OF the high hurdles in the path toward a successful immunization procedure against the viruses that cause trachoma has been cleared.

Three Harvard scientists have been able to prevent the usual quick death of experimental mice receiving live trachoma viruses. Death is prevented by prior vaccination with an inoculum that contains inactive trachoma viruses.

Their findings reported in *Science* (Sept. 11) may assist in solving the most baffling problem in trachoma research: whether it is possible to immunize human beings against the different viruses causing the disease. Trachoma is an eye disease which impairs vision and causes blindness. It is most prevalent in tropical and subtropical areas.

The researchers are Drs. Samuel D. Bell Jr., John C. Snyder and Edward S. Murray of the department of microbiology, Harvard School of Public Health, Boston.

Science News Letter, September 26, 1959

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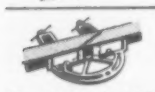
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# New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D.C., and ask for Gadget Bulletin 1006. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

**FISH FLOAT** flashes when the fish nibbles. The float is made of durable plastic and is powered by a midget dry cell battery. The sensitivity of the light is adjustable. It can be used day or night and in fresh or salt water.

Science News Letter, September 26, 1959

**OUTDOOR INFRARED HEATER** that looks like a fluorescent light tube can heat outdoor areas such as gas stations, subway platforms or drive-in restaurants. The heat element emits infrared radiation and so only heats objects in its path. People are warmed while the air remains cold. It is not damaged if touched by ice and reportedly can be used in the coldest of climates.

Science News Letter, September 26, 1959

**ELECTRONIC ORGAN** for the musically-minded do-it-yourselfers has all printed circuitry that makes assembly time about 40 hours. The organ has a horseshoe style console in walnut wood, preassembled keyboards and built-in speakers and amplifiers.

Science News Letter, September 26, 1959

**PLASTIC DRUMS** for industry weigh less than a sixth as much as steel drums of the same size. The 55-gallon polyethylene container, shown in the photograph, is resistant to all acids and chemicals and



is reportedly extremely durable. It might also serve for removing trash from the back yard of the home.

Science News Letter, September 26, 1959

**PAINT BRUSH CLEANER** spins the paint brush or roller in a bottle to remove all paint. You pull a string wound around the top of the bottle to spin the brush by

a yo yo effect. After the brush has been spun clean in a solvent the spinner can whirl it dry. The completely mechanical device works for brushes not larger than four inches wide.

Science News Letter, September 26, 1959

**KITCHEN TOOL** picks, mixes, whips, turns, stirs and serves. The versatile aid is shaped like a large tweezer with wire to outline its flattened tips. Made of aluminum, the tool is reportedly easy to clean.

Science News Letter, September 26, 1959

**CONTINENTAL COFFEE MAKER** makes one cup at a time, using drip-grind coffee. This kind of coffee maker is used extensively in European cafes and hotels. One style in polished aluminum with a plastic handle and one in solid copper with a brass handle are available.

Science News Letter, September 26, 1959

**DISPOSABLE TOOTHBRUSHES** sealed in sanitary packages are charged with dentifrice and ready for use. The polyethylene brushes are designed for overnight guests, for hotel and motel "give-aways" and for hospital use. Made to be thrown away after one brushing, they reportedly remain sanitized for 18 months when kept in the packages.

Science News Letter, September 26, 1959

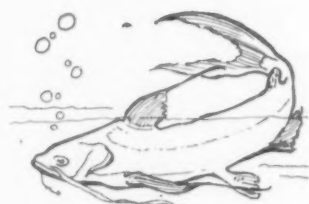


## Nature Ramblings



By HORACE LOFTIN

### Shark Bait!



FISHING HAD been slow off the pier at Alligator Harbor, just a few small cats and pinfish to nibble away the bait. So when that big gaff topsail catfish (see illustration) snatched at the cut mullet, it almost tore the rod from the fisherman's hand. With the light spinning rig it took several minutes to bring the big catfish close to the dock.

It was a big one, close to two feet long. Then at the crucial moment, just as the fisherman tried to work the fish toward a net, something exploded from beside the dock. A long, black shadow rushed toward the hooked fish, struck it and was gone. A single swipe of a seven-foot shark and nothing was left of the catfish but the head dangling loosely from the hook.

There had always been a few small sharks out in the bay, and from time to time a larger one. But this big, voracious fellow was feeding right at the dock from which everyone fished, swam and boated. Along with the rash of shark scares from both coasts, it seemed the path of wisdom

lay in not offering yourself as shark bait in that water.

This has been an unusual year for shark attacks. On the West Coast, at least two lives have been lost to man-eaters in areas that had been thought to be perfectly safe. Other attacks have been reported from the Atlantic.

On the Florida Gulf coast recently, one young skin diver was savagely attacked. He was lucky: he escaped with his life, although it took 80 stitches to put him back in shape.

Later in the same general area, a diver

disappeared under water. Companions found only his mangled flippers and face mask on the bottom; they were menaced by sharks during the search.

Why the apparent increase in shark attacks in American waters? It has been suggested that a general warming of near-shore waters has brought the man-eaters in closer. It is generally believed, for instance, that the Gulf Stream has moved in closer to shore along the mid-Atlantic. There has been a big increase in swordfish and marlin there, probably due to this shift in current; why not sharks, too?

Another suggestion has been made: more people are now swimming, fishing and boating in the ocean than ever before, thus increasing the likelihood of shark attack.

Actually, the chances of being attacked by a shark while at the beach are probably the same as those of being struck by lightning or getting food poisoning at a picnic: the chances are always with us, but seldom realized. Exercise reasonable caution, as you should in any event while in the ocean, and enjoy your stay at the beach.

Science News Letter, September 26, 1959



